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Voyager 2 Mapping of the NW Region of the Vela Supernova Remnant

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Work on this grant has been completed. A paper reporting the primary results was published in the following reference:

Blair, W. P., Vancura, O., and Long, K. S., "Voyager 2 UVS Spectra of the Vela Supernova Remnant," 1995, AJ, 110, 312-317.

Preliminary results of this research were also presented at IAU. Coll. 145, "Supernova and Supernova Remnants," held in Xian, China, in May 1993. An article was submitted to the *Proceedings* of this meeting, which finally appeared in print this last year:

Blair, W. P., "Far-Ultraviolet Observations of Supernova Remnants," 1996, in *Supernovae and Supernova Remnants*, IAU Coll. 145, ed. by R. McCray and Z. Wang (CUP:Cambridge), p. 391-397.

The research for this grant involved the use of a large set of data on the Vela supernova remnant in the southern Milky Way, obtained with the Ultraviolet Spectrometers onboard the Voyager spacecraft. The Vela SNR is very large in angular size, some 8 degrees across, and only portions of the object could be observed. The spectrometer was scanned across various portions of the object in order to observe the far ultraviolet spectrum. Two primary spectral features were observed in the 900-1200 Angstrom region, belonging to the lines of C III 977 and O VI 1032,1038, which trace relatively cool and hot gas, respectively. These observations were the first far-ultraviolet measurements to detect the important O VI ion in emission in the Vela SNR, which is only the second galactic SNR to be so-detected. By measuring the relative intensities of these lines as a function of position, we were able to investigate the ionization structure along the rim of the remnant. We were also able to compare with optical and X-ray observations of the observed regions, and compare with the Cugnus Loop Voyager observations we had published previously. Vela appears to be expanding into a region of ISM with substantially different characteristics than the Cygnus Loop, which accounts for the observed difference in the filling factor of shocks that emit in the O VI ion.